modulating a light with the adjusted electrical modulation signal; and

transmitting the modulated light through an optical transmission path, wherein said adjusting adjusts at least one of the rise time and the fall time in accordance with characteristics of the modulated light as received by a receiver through the optical transmission path.

35. (TWICE AMENDED) A method comprising:

adjusting at least one of a rise time and a fall time of a modulation signal;

modulating a light with the adjusted modulation signal;

C14 transmitting the modulated light through an optical transmission path; and

receiving the transmitted, modulated light from the optical transmission path, wherein said adjusting adjusts said at least one of the rise time and the fall time in accordance with characteristics of the transmitted, modulated light as received by said receiving.

37. (TWICE AMENDED) An apparatus comprising:

means for adjusting at least one of a rise time and a fall time of a modulation signal; and

a modulator modulating a light with the adjusted modulation signal, wherein said means

C15 adjusts said at least one of the rise time and the fall time in accordance with characteristics of the modulated light as received by a receiver through an optical transmission path.

REMARKS

I. STATUS OF THE CLAIMS

Claims 2, 3 and 4 are canceled herein.

In view of the above, it is respectfully submitted that claims 1, 5-8, 11-20, 22-29, 31-33, 35 and 37 are currently pending.

II. REJECTION OF CLAIMS 1-8, 11-12, 15-20, 22, 25-29, 31-33, 35 AND 37 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUSE (USP 5,608,561) IN VIEW OF CLOW (USP 6,005,561)

The present invention as recited, for example, in independent claim 16, relates to an apparatus comprising an adjusting circuit and a modulator. The adjusting circuit adjusts a rise time and/or a fall time of an electrical modulation signal. The modulator modulates a light with the adjusted electrical modulation signal. Moreover, as recited in claim 16, the adjusting circuit adjusts the rise time and/or fall time in accordance with characteristics of the modulated light as

received by a receiver through an optical transmission path.

Please note that claim 16, and all the other claims, are amended to clarify that the transmission path is an "optical" transmission path.

Marcuse discloses that pulse rising and falling times of a transmitted pulse can be reduced, to thereby reduce modulator chirp of an optical modulator. Thus, Marcuse specifically relates to reducing modulator chirp which is defined by Marcuse as excess spectral broadening imparted by the modulator. See, for example, column 6, lines 25-27, of Marcuse.

On page 2 of the Office Action, the Examiner admits that Marcuse does not specifically teach that changes are made in accordance with characteristics of the signal light at a receiver. However, the Examiner asserts that such operation would be obvious in view of Marcuse, or obvious in view of Marcuse in combination with Clow.

In Marcuse, the rise time and fall time are fixed after being initially set. No portion of Marcuse discloses or suggests that the rise time and fall time are subsequently adjusted after being initially set. Moreover, as Marcuse relates to reducing modulator chirp, Marcuse does not seem so concerned with the signal light as received by a downstream receiver.

Therefore, it is respectfully submitted that the adjusting of the rise time and/or fall time in accordance with characteristics of the signal light at the receiver would not be obvious in view of Marcuse, by itself.

Clow relates to transmission of electrical signals through a coaxial cable, wire pair, or other type of "wire" transmission path. See, for example, column 1, lines 31-38; column 2, lines 30-62; and column 3, lines 46-51, of Clow.

Therefore, it should be understood that Clow relates to transmission through a "wire" transmission path, such as a coaxial cable or wire pair. By contrast, the claimed invention relates to transmission through an "optical" transmission path.

To more clearly distinguish over Clow, all the claims are amended to recite an "optical" transmission path.

Moreover, it should be understood that Clow relates to transmission of "electrical" signals (NOT light). By contrast, the claimed invention relates to the transmission of "light".

Further, Clow does not include any disclosure indicating that a carrier or modulator is involved. Instead, it appears that Clow directly transmits an information signal through the wired

transmission path, without using a carrier or modulator. For example, various portions of Clow indicate that, by adjusting the rise time or fall time, the transmission rate through the wired transmission path is increased or decreased, thereby indicating a direct transmission of the information signal through the wired transmission path. See, for example, the last line of the Abstract; column 1, lines 62-64; column 2, lines 9-14; column 5, lines 8-27; column 5, lines 39-42, of Clow. See also, for example, FIGS. 2 and 3 of Clow. Such type of direct transmission is common, for example, in transmissions over a relatively short distance.

By contrast, the present invention as recited in claim 16 relates to the adjusting of the rise time and/or fall time of an "electrical modulation signal" which is used to modulate a light (i.e., a carrier). Therefore, claim 16 relates to adjustment of the modulation signal used to modulate a carrier light. The modulated light (i.e., the modulated carrier) is then transmitted through a transmission path. By contrast, as indicated above, Clow does not disclose or suggest the use of a carrier. Therefore, the fundamental nature of the transmission in Clow is significantly different than that in the claimed invention.

Please note that claim 1 is amended to recite that the rise time and/or fall time of an "electrical modulation signal" is adjusted, and that a light is then modulated with the adjusted electrical modulation signal. Generally, claim 1 is amended to include the limitations of claim 3, and claim 3 is canceled.

* * *

Moreover, as indicated above, in Marcuse, the rise time and fall time are fixed after being initially set. No portion of Marcuse discloses or suggests that the rise time and fall time are subsequently adjusted after being initially set. Therefore, it is respectfully submitted that the optical modulator of Marcuse should not be combined with the adjustment of a rise time and/or fall time in Clow.

Further, as indicated above, Marcuse relates to reducing modulator chirp of an optical modulator. By contrast, Clow relates to transmission of electrical signals through a coaxial cable, wire pair, or other type of "wire" transmission path. Therefore, Marcuse relates to optical technology and optical transmission, and Clow relates to electrical technology and electrical transmission. Accordingly, it is respectfully submitted that Marcuse and Clow should be considered non-analogous art for the purpose of this rejection.

* * *

In view of the above, it is respectfully submitted that the rejection is overcome.

III. REJECTION OF CLAIMS 13, 14, 23 AND 24 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUSE IN VIEW OF CLOW AND CHRAPLYVY (USP 5,420,868

The comments in Section II, above, also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

IV. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge such fees to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: February 5, 2003

By: _____
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please CANCEL claims 2, 3 and 4 without prejudice or disclaimer.

Please AMEND the claims as indicated below:

For the convenience of the Examiner, all the pending claims are listed below, whether or not the claims are amended herein.

1. (TWICE AMENDED) An apparatus comprising:

an optical transmitter comprising [transmitting a signal light to a transmission path]

a light source emitting a light,

a modulation signal generator generating an electrical modulation signal having a corresponding rise time and fall time,

an adjusting circuit adjusting at least one of the rise time and fall time of the electrical modulation signal, and

a modulator modulating the emitted light with the adjusted electrical modulation signal, the optical transmitter transmitting the modulated light to an optical transmission path; and

a receiver receiving the transmitted, modulated [signal] light through the optical transmission path, wherein [the signal light has a corresponding rise time and fall time and the transmitter] the adjusting circuit adjusts at least one of the rise time and fall time in accordance with characteristics of the [signal] modulated light at the receiver.

5. (ONCE AMENDED) An apparatus as in claim [2] 1, wherein the adjusting circuit adjusts both the rise time and the fall time.

6. (ONCE AMENDED) An apparatus as in claim 1, wherein the [transmitter] adjusting circuit lengthens both the rise time and the fall time.

7. (ONCE AMENDED) An apparatus as in claim 1, wherein the [transmitter] adjusting circuit shortens both the rise time and the fall time.

8. (ONCE AMENDED) An apparatus as in claim 1, wherein the [transmitter]

adjusting circuit adjusts both the rise time and the fall time to maintain amplitude deterioration and phase margin of the transmitted [signal] modulated light within a specific range.

11. (TWICE AMENDED) An apparatus as in claim 1, wherein the [transmitter] adjusting circuit performs one [of the group consisting] of

lengthening both the rise time and the fall time in accordance with the characteristics of the [signal] transmitted modulated light at the receiver,

shortening both the rise time and the fall time in accordance with the characteristics of the [signal] transmitted modulated light at the receiver, and

adjusting both the rise time and the fall time to maintain amplitude deterioration and phase margin of the transmitted [signal] modulated light within a specific range in accordance with the characteristics of the [signal] transmitted modulated light at the receiver.

12. (TWICE AMENDED) An apparatus as in claim 1, further comprising:

a controller controlling the [transmitter] adjusting circuit to adjust said at least one of the rise time and fall time in accordance with the characteristics of the [signal] transmitted modulated light at the receiver.

13. (ONCE AMENDED) An apparatus as in claim [3] 1, wherein the modulator modulates the emitted light via one of the group consisting of optical phase modulation and optical frequency modulation.

14. (ONCE AMENDED) An apparatus as in claim 1, further comprising:

a dispersion compensator compensating for wavelength dispersion characteristics of the optical transmission path.

15. (ONCE AMENDED) An apparatus as in claim 1, further comprising:

a plurality of said optical transmitters, each transmitting a respective [signal] modulated light having a different wavelength than the [signal] modulated lights of the other optical transmitters; and

an optical multiplexer multiplexing the [signal] modulated lights together into a wavelength division multiplexed (WDM) signal which is transmitted through the optical transmission path.

16. (TWICE AMENDED) An apparatus comprising:

an adjusting circuit adjusting at least one of a rise time and a fall time of an electrical modulation signal; and

a modulator modulating a light with the adjusted electrical modulation signal, wherein the adjusting circuit adjusts said at least one of the rise time and the fall time in accordance with characteristics of the modulated light as received by a receiver through [a] an optical transmission path.

17. (NOT AMENDED) An apparatus as in claim 16, wherein the adjusting circuit adjusts both the rise time and the fall time.

18. (NOT AMENDED) An apparatus as in claim 16, wherein the adjusting circuit lengthens both the rise time and the fall time.

19. (NOT AMENDED) An apparatus as in claim 16, wherein the adjusting circuit shortens both the rise time and the fall time.

20. (ONCE AMENDED) An apparatus as in claim 16, wherein the adjusting circuit adjusts both the rise time and the fall time to maintain amplitude deterioration and phase margin of the modulated light within a specific range.

22. (TWICE AMENDED) An apparatus as in claim 16, further comprising:

a controller controlling the adjusting circuit to adjust said at least one of the rise time and fall time in accordance with the characteristics of the [signal] modulated light at the receiver.

23. (NOT AMENDED) An apparatus as in claim 16, wherein the modulator modulates the light via one of the group consisting of optical phase modulation and optical frequency modulation.

24. (TWICE AMENDED) An apparatus as in claim 16, further comprising:

a dispersion compensator compensating for wavelength dispersion characteristics of the optical transmission path.

25. (NOT AMENDED) An apparatus as in claim 16, wherein the adjusting circuit comprises:

a electrical amplifier amplifying the electrical modulation signal; and

a filter filtering the amplified electrical modulation signal.

26. (ONCE AMENDED) An optical communication system comprising:

a transmitter including an adjusting circuit adjusting at least one of a rise time and a fall time of an electrical modulation signal, and a modulator modulating a light with the adjusted electrical modulation signal, the transmitter transmitting the modulated light through [a] an optical transmission path;

a receiver receiving the transmitted, modulated light through the optical transmission path; and

a controller controlling the adjusting circuit to adjust said at least one of the rise time and fall time in accordance with characteristics of the modulated light at the receiver.

27. (ONCE AMENDED) An optical communication system as in claim 26, wherein the controller controls the adjusting circuit to perform one of: [the group consisting of]

lengthening both the rise time and the fall time in accordance with characteristics of the modulated light at the receiver,

shortening both the rise time and the fall time in accordance with characteristics of the modulated light at the receiver, and

adjusting both the rise time and the fall time to maintain amplitude deterioration and phase margin of the modulated light within a specific range in accordance with characteristics of the modulated light at the receiver.

28. (TWICE AMENDED) An apparatus comprising:

an adjusting circuit adjusting at least one of a rise time and a fall time of a modulation signal; and

a modulator modulating a light with the adjusted modulation signal, wherein the adjusting circuit adjusts said at least one of the rise time and the fall time in accordance with characteristics of the modulated light as received by a receiver through [a] an optical transmission path.

29. (ONCE AMENDED) An apparatus as in claim 28, wherein the adjusting circuit performs one of [the group consisting of]:

adjusting both the rise time and the fall time,

lengthening both the rise time and the fall time, and

shortening both the rise time and the fall time.

31. (ONCE AMENDED) An apparatus as in claim 28, further comprising:

a controller controlling the adjusting circuit to adjust said at least one of the rise time and fall time in accordance with the characteristics of the modulated light at the receiver.

32. (NOT AMENDED) An apparatus as in claim 28, wherein the adjusting circuit comprises:

an amplifier amplifying the modulation signal; and

a filter filtering the amplified modulation signal.

33. (TWICE AMENDED) A method comprising:

adjusting at least one of a rise time and a fall time of an electrical modulation signal;

modulating a light with the adjusted electrical modulation signal; and

transmitting the modulated light through an optical transmission path, wherein said adjusting adjusts at least one of the rise time and the fall time [a signal light] in accordance with characteristics of the [signal] modulated light as received by a receiver through [a] the optical transmission path. [;and transmitting the adjusted signal light through the transmission path to the receiver.]

35. (TWICE AMENDED) A method comprising:

adjusting at least one of a rise time and a fall time of a modulation signal;

modulating a light with the adjusted modulation signal;

transmitting the modulated light through [a] an optical transmission path; and

receiving the transmitted, modulated light from the optical transmission path, wherein said adjusting adjusts said at least one of the rise time and the fall time in accordance with characteristics of the transmitted, modulated light as received by said receiving.

37. (TWICE AMENDED) An apparatus comprising:

means for adjusting at least one of a rise time and a fall time of a modulation signal; and

a modulator modulating a light with the adjusted modulation signal, wherein said means adjusts said at least one of the rise time and the fall time in accordance with characteristics of the modulated light as received by a receiver through [a] an optical transmission path.